MATH 253

Today

1. Finish 5.3 Diagonalizability (Understand when a matrix is similar to a diagonal matrix and how to diagonalize it.)
2. Python 2
3. WeBWorK

Where is today's material used?

1. Physics (quantum physics, principle axes, fluid dynamics, ...)
2. Economics
3. Math (differential equations, statistics, ...)

Lemma 0.1. *If A is similar to B, say $B = S^{-1}AS$, and X is an eigenvector of B corresponding to λ, then SX is an eigenvector of A corresponding to λ.*

Theorem 1. *Let A be an $n \times n$ matrix. Then A is similar to a diagonal matrix D if and only if A has n linearly independent eigenvectors. In this case, if the eigenvectors are $v_1, \ldots, v_n$ corresponding to $\lambda_1, \ldots, \lambda_n$, then with $S = [v_1 \ldots v_n]$, $S^{-1}AS = D = diag(\lambda_1, \ldots, \lambda_n)$.*

Next Time

1. 5.4 Page Rank
2. 1 proof due today (5.2: 10)
3. 3 proofs due Wednesday (5.3: 17, 18, 19)